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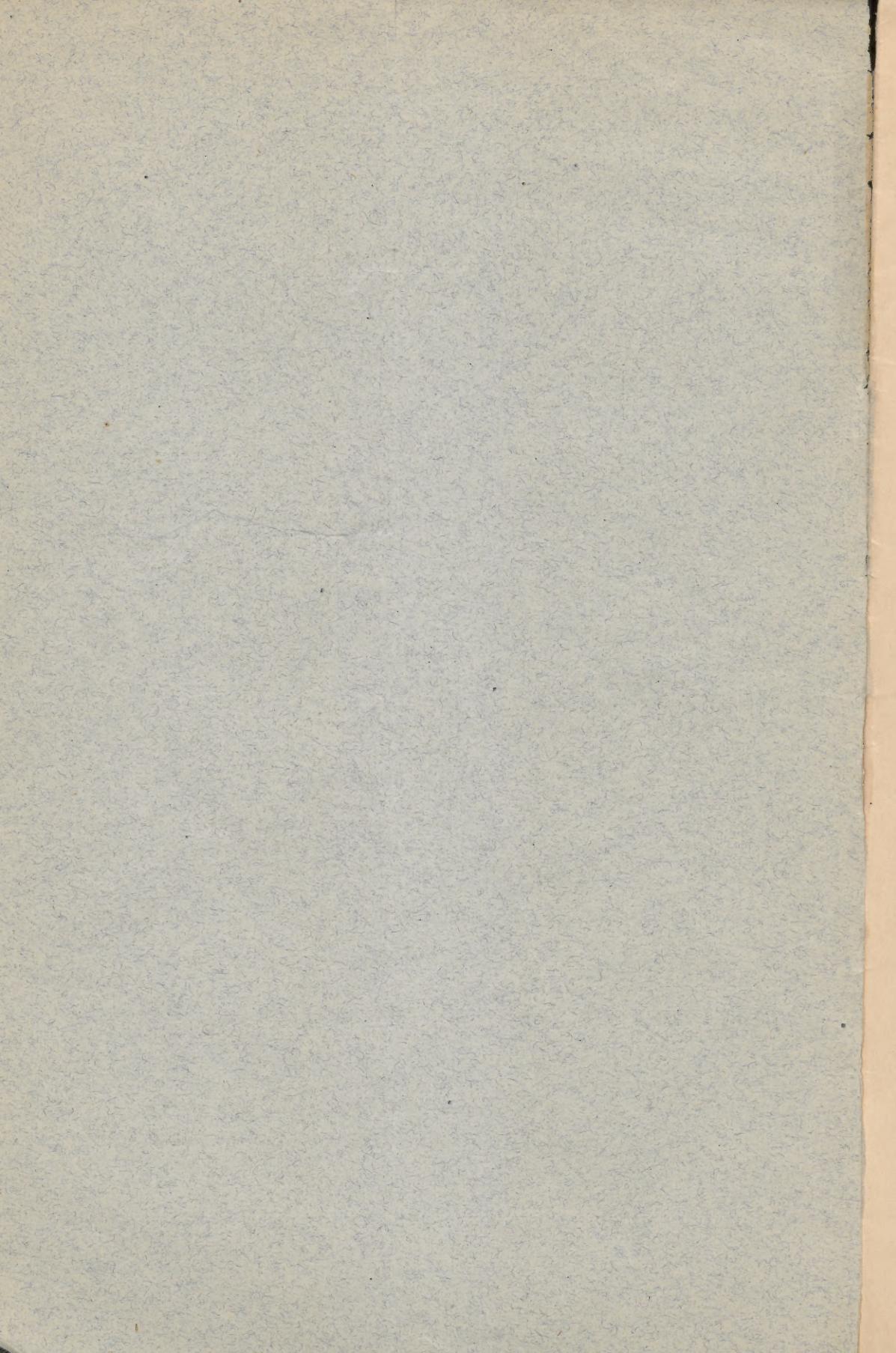
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A CASE OF UNILATERAL CHROMIDROSIS (?).

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THE occurrence of so-called chromidrosis over limited areas of the cutaneous surface is among the rarer affections of the skin, not a single instance having been reported in the "Combined Returns of Five Years" published by our association in the last volume of the Transactions; not one case, that is, in 58,617 cases of disease of the skin observed by members of this society. Even the comparatively few instances which have been reported in various parts of the world under this title have not all been true cases of chromidrosis or colored sweat, but apparent discoloration of the skin due to the growth of bacteria upon the hairs of parts thus affected. In the majority of these cases there is no evidence that the sweat itself is colored, or in any way abnormal in character, or even excessive in amount. They are apparently cases of parasitism of the hairs, chiefly in localities kept constantly moist by abundant perspiration, as the axillary and genital regions, although the presence of the sweat may be an essential condition of its existence. Such are, no doubt, the reported instances of the "red sweat" of the axillæ, the color of the parts and of the garments stained by contact with them being of an orange or brilliant red tint. The parasitic nature of this form of the affection has been well established by the investigations of numerous competent observers.

Bacteria have also been found in yellow sweat² and in blue sweat, but the same forms have also been observed in colorless perspiration. Indeed, in well-marked forms of persistent red sweat, where the red bacteria have been redeveloped by cultivation upon other soil, these growths are sometimes colorless in parts, so that it may be that some occasional individual peculiarity in the character of the perspiration is essential to the development of this pigment in a plant, possibly of common occurrence in a colorless form in the axillæ. Babesiu¹ states that these bacteria resemble both the ordinary colorless growths of the hairs and sweat, and also the red *bacterium prodigiosum*. The coloring-matter is situated in the substance between the cells, and is changed to a light-yellow by ammonia, but to a red again by the addition of an acid.

The cases more properly called chromidrosis are not due to the

¹ Read at the eighth annual meeting of the American Dermatological Association.

² Eberth, Centralblatt für Med. Wiss., 1873, No. 20.

³ Centralblatt für Med. Wiss. 1882, p. 146.

presence of bacteria, but to some coloring principle of the economy discharged through the cutaneous secretions in a soluble form, and deposited upon the surface of the skin in an amorphous or granular state. Foot¹ collected thirty-eight cases, which he considered to be authentic, in which the color in twenty-one was black, blackish, or brownish; fifteen in which it was blue, bluish-black, bluish-brown, or violet; and two in which it was yellowish-brown or ochreous. In the cases which have been reported since then, the color has been mostly blue or some variation on it, as blue-black or blue-red. This form occurs chiefly upon the face, especially upon the eyelids, and all but one of Foot's series occupied this location. In this exceptional case the backs of the hands were affected. Similar discolorations of the sternum and genital regions have also been observed. Chemical analysis of the matter deposited upon the skin in several of these cases revealed the presence of indican, a well-known pigment of the human economy, in some of its forms, indigo-blue or indigo-red; nor is it surprising that the sweat glands should supplement occasionally the action of the kidneys in the excretion of this substance, as in the case of other principles of the urine. Cyanogen compounds and phosphate of iron have also been discovered in such cases of blue sweat.

Much doubt has been entertained at times concerning the genuineness of this class of cases, and instances of attempts to deceive on the part of patients by the artificial production of such appearances upon the face are on record. An example of such simulation, although unintentional, occurred under my own observation, some twenty years ago. I was asked to see a case of blue sweat which had excited the interest of many members of our profession in Boston, and which, it was claimed, was genuine, because exhibited upon the person of an honest old woman far beyond the hysterical age at which it usually appears in her sex. The patient presented upon the lower eyelids a distinct blue stain extending downwards upon the cheeks. It was seen also at times upon the upper eyelids. Its position varied slightly from day to day, and occasionally it was wholly absent. The color was always very faint in the morning and increased in intensity until evening. The patient stated that the parts affected itched slightly. The case had been reported as chromidrosis, and had an analysis been made of the pigment, which gave a decided blue stain to a white handkerchief wiped over it, this diagnosis would have been undoubtedly confirmed by the discovery of some of the coloring principles of indigo. I found the face at my visit of a decidedly bluish tinge about the eyes, darkest upon the lower eyelid, which faded out, with no well-defined border, half-way down the cheeks. The skin thus discolored appeared otherwise entirely normal, and the patient stated that it did not perspire more freely than other parts of the face. This condi-

¹ Dublin Quarterly, Aug., 1869.

tion had existed for several weeks. I noticed that the attending physician had, strange to say, overlooked that the woman's occupation was knitting of stockings, and that the yarn employed was blue. On examination her finger ends were found to be deeply stained by the indigo pigment, and a little observation showed that she had the habit of frequently rubbing the skin below her eyes with her fingers, probably on account of some habitual pruritus of the parts, and that the face became more and more deeply stained through the day by their constant application to the face. When gray or white yarn was substituted, the blue stain about the eyes ceased to appear. Thus simply was solved the etiology of an apparently genuine case of blue chromidrosis.

References to the excretion of yellow sweat are among the least common in literature, and the case which I now report is, so far as I can ascertain, unparalleled. The patient was referred to me by my friend, Dr. Garland, in April last. He was a German, twenty years old, in apparently perfect health. He was a light blond, and of fresh color. He had been in this country three years, working in a sugar factory. Since last October, a period of six months, he had noticed that the left side of his shirt was constantly stained of a yellow color, and that the ordinary processes of laundry washing did not wholly remove the color from the underclothing, so that it became more and more deeply stained. He, as all workmen in this employment, was accustomed to sweat profusely during his working hours over the whole surface, but not more freely since October, nor more upon the left side, according to his observation, than previously to that date. He was somewhat alarmed at his condition, but felt well in all respects, and there were no abnormal sensations upon the affected side of the body, nor in the skin itself covering it.

By the direction of Dr. Garland, he had put on an entirely new white shirt a week before his visit to me, which he had worn constantly since. It was stained of a bright saffron color upon the left side from the shoulder down to the end of the flap. The color was most intense upon the back and side, not extending beyond the median line posteriorly and scarcely reaching beyond the line of the nipple in front. The sleeve was slightly discolored near the shoulder. The stained portions had a somewhat translucent, greasy look. The skin itself of the corresponding regions presented no abnormal appearances, and was of a natural color. According to the patient's report, it never became more yellow than other parts of the surface. The care of the integument had been in accordance with the usual customs of working men, infrequent bathing, that is; but no amount of extra washing with soap since the appearance of the trouble had seemed to control it, even temporarily.

The patient was kept under observation for two weeks without treatment, and the clothing continued to be stained as before. He was then

directed to apply an ointment of salicylic and boracic acids to the parts affected, and the trouble disappeared in the course of ten days. He was seen once again two weeks subsequently, and again August 19th, and he still remains free from it.

The shirt, which was so deeply stained after a week's contact with the skin, was carefully examined by Dr. Ernst for the presence of bacteria, but no such growths were found. It was then given to Professor E. S. Wood for chemical analysis, who reported that the yellow coloring matter was insoluble in water, but was readily extracted from the garment by ether. An examination of this ethereal solution showed that the color was not due to the presence of lutein, the coloring principle of serum and yolk of egg, as it did not give the absorption-bands of that substance with the spectroscope, although it resembled it in absorbing the blue and violet rays when in a concentrated solution. On gradually diluting the latter, the spectrum slowly reappears without any absorption-bands being produced, whereas, by diluting a strong solution of lutein the two absorption-bands in the blue are plainly discernible. Neither did the yellow coloring matter give the characteristic absorption-bands of any of the known animal pigments, as indican, bilirubin (haematoxin), or coloring principles of the urine. On evaporating the ethereal solution, there remained a homogeneous oily fluid freely soluble in ether and alcohol, from which the coloring matter could not be extracted.

Does the result of the chemical analysis in this case determine whether it was one of chromidrosis or not? This is a question not easily settled in the ordinary forms of the affection even, and the origin of the colored secretions has been referred both to the sebaceous and sweat glands by dermatologists. The oily nature of the product here would give greater probability to the inference that it was derived from the sebaceous glands, but recent investigations show that fat is also excreted by the sweat glands in considerable quantity, and some observers, as Unna, maintain that the secretion of oil for the skin is their principal function, and that the sebum is designed for the use of the hair alone. This latter view may have been applicable to the primeval hairy man, as for the scalp of his descendants to-day, but, as the result of possible evolution, the preservation of the sebaceous glands and the degeneration of the pilous tissues over the general surface have so reversed the mutual relations of these structures that no such restriction in the economy of the former to the lanugo growth alone seems tenable. The fatty nature of the product, therefore, cannot be offered as conclusive evidence of its source of excretion. On the other hand, the more complex composition of the sweat, its more intimate connection with the blood, and the well-known supplementary relationship between the sweat glands and the kidneys, as a general channel of excretion, point to the latter as the more

probable origin of a strange pigment. But whichever of these systems of glands be the source of excretion, how comes this substance in them? Is it a constant element in their secretions in minute amount, manufactured in this instance in extraordinary quantity, thus explaining the not very uncommon yellowish staining in slight degree of the underclothing of some persons; or was it exceptionally formed in this case within these gland structures, or excreted by them by chance from the blood? Whichever hypothesis seems the more likely, it affords no satisfactory explanation of the unilateral character of the discharge, although this localization suggests a secretion rather than an excretion on the part of the glands. Nor is it easier to understand how the treatment should have so abruptly and effectually brought this strange phenomenon to an end. We must leave the solution of these problems to the farther investigations of the chemist and physiologist.



